What is claimed:

1. Apparatus for sensing the level of fluid within a container comprising:

a) a base fixed relative to the container;

b) a movable member supported by the base for relative positioning with respect to said base;

c) a float member that moves relative to the base as the level of fluid in a container changes;

d) an arm attached to the movable member and float member wherein the position of the float is translated into movement of the moveable member with respect to said base;

e) at least one magnetic flux sensor coupled to one of the moveable member or base that is capable of creating an electrical output signal in response to a change in magnetic flux density; and

f) at least one magnet disposed proximate the magnetic flux sensor coupled to one of the moveable member or base for providing a magnetic field to induce a change in electrical output response from the magnetic flux sensor as the float member moves with changes in fluid level.

2. A fluid level sensor according to claim 1 wherein the at least one magnetic flux sensor element comprises a programmable linear ratiometric Hall effect integrated circuit having programmable gain, offset voltage and temperature compensation.

3. A fluid level sensor according to claim 1 wherein the magnetic field is provided using a permanent magnet.

4. A fluid level sensor according to claim 1 wherein the magnetic field is provided using an electromagnet.

5. A fluid level sensor according to claim 1 wherein the magnetic flux sensor remains stationary while the magnetic field changes position relative to the magnetic flux sensor.

6. A fluid level sensor according to claim 1 wherein the magnetic field remains stationary while the magnetic flux sensor changes position relative to the magnetic field.

7. A fluid level sensor according to claim 1 wherein the float and float arm are attached to the movable member.

8. A fluid level sensor according to claim 1 wherein the base has an integral mounting feature so that the fluid level sensor can be mounted to and positively located on a fuel pump module, other fuel system mounting feature or other mounting feature within a fluid container.

9. A fluid level sensor according to claim 1 wherein the base or movable member has integral features for positively positioning the magnetic flux sensor.

10. A fluid level sensor according to claim 1 wherein the base has integral spring members that positively axially locate a rotating magnetic hub to the pivot base.

11. A fluid level sensor according to claim 1 wherein the base has integral latch members to positively axially locate a rotating magnetic hub to the base.

12. A fluid level sensor according to claim 1 wherein the base has an integral electrical connector block for making electrical connections to the sensor

electronics.

13. A fluid level sensor according to claim 1 wherein the base has a cavity for housing the lead frame and magnetic flux sensor where encapsulant is applied.

14. A fluid level sensor according to claim 1 wherein the base has a first travel stop to prevent the float arm from exceeding maximum upward travel and a second travel stop to prevent the float arm from exceeding maximum downward travel.

15. A fluid level sensor according to claim 1 wherein the base comprises an encapsulant for isolating the electronics from harsh fluids found in liquid fuels.

16. A fluid level sensor according to claim 15 wherein said encapsulant protects the electronics by dampening mechanical vibration and shock.

17. A fluid level sensor according to claim 15 wherein said encapsulant maintains positive positioning of the magnetic flux sensor.

18. A fluid level sensor according to claim 1 wherein the base comprises a stainless steel housing that isolates the electronics from harsh fluids in the container.

19. A fluid level sensor according to claim 1 wherein the base comprises a stainless steel housing with an integral glass passivated leads that protects the electronics by dampening mechanical vibration and shock.

20. A fluid level sensor according to claim 1 wherein the base comprises a

stainless steel housing with an integral glass passivated lead frame maintains positive positioning of the magnetic flux sensor.

21. A fluid level sensor according to claim 1 additionally comprising a lead frame made up of a number of leads provides additional mechanical support and protection for the electronics.

22. A fluid level sensor according to claim 1 additionally comprising a lead frame that helps to locate the magnetic flux sensor within the sensor assembly.

23. A fluid level sensor according to claim 1 additionally comprising a lead frame provides the electrical terminals that completes the integrated electrical connector of the pivot base.

24. A fluid level sensor according to claim 1 additionally comprising a lead frame provides an electrical path to other optional circuitry.

25. A fluid level sensor according to claim 1 wherein the moveable member comprises a magnet hub has at least one integral axial spring member that positions the magnet toward the magnet hub center axis.

26. A fluid level sensor according to claim 1 wherein the moveable member comprises a magnet hub has at least one integral spring member that positions the magnet depth within the magnet hub.

27. A fluid level sensor according to claim 1 wherein the moveable member comprises a magnet hub has at least one integral spring member that positions the magnet relative to the magnet axis coincident with the pivot axis of the magnet hub.

28. A fluid level sensor according to claim 1 wherein the float arm comprises a yoke that attaches symmetrically to the float to reduce cantilevering in the float arm.

29. A fluid level sensor according to claim 1 wherein a pivoting float maintains similar orientation to the fluid surface throughout the range of float arm travel.

30. A fluid level sensor according to claim 1 wherein a non-pivoting float produces a calculated and desirable change in the output signal characteristics of the sensor.

31. A fluid level sensor according to claim 1 wherein a float geometry defines a float thickness that is less than a width dimension of generally flat float top and bottom surfaces to enhance float buoyancy for low fluid level detection.

32. A fluid level sensor according to claim 31 wherein the float thickness is less than either a width or length dimension of a generally rectangular float top and bottom surfaces to enhance float buoyancy for low fluid level detection.

33. A method for fabricating a sensor for sensing the level of fluid within a container comprising:

a) fixing a base relative to the container;

b) coupling a movable member to the base for relative positioning with respect to said base;

c) providing a float member that moves up and down with the level of fluid in a container changes;

d) attaching the float member to the moveable member by means of an arm attached to the moveable member and float member wherein the position of

the float is translated into movement of the moveable member with respect to said base;

e) coupling a magnetic flux sensor to one of the moveable member or base that is capable of creating an electrical output signal in response to a change in magnetic flux density; and

f) positioning at least one magnet disposed proximate the magnetic flux sensor coupled to one of the moveable member or base for providing a magnetic field to induce a change in electrical output response from the magnetic flux sensor as the float member moves up and down with changes in fluid level.

34. The method of claim 33 additionally comprising providing an encapsulant for isolating the electronics from harsh fluids found in liquid fuels.

35. The method of claim 33 additionally comprising providing an encapsulant that protects the electronics by dampening mechanical vibration and shock.

36. The method of claim 33 wherein said encapsulant maintains positive positioning of the magnetic flux sensor.

37. The method of claim 33 additionally comprising providing as part of the base a non-magnetic housing that isolates the electronics from harsh fluids in the container.

38. The method of claim 37 wherein the non-magnetic housing is stainless steel.

39. The method of claim 38 wherein conductive leads that exit the stainless steel housing are glass passivated to protect the electronics by dampening mechanical vibration and shock.

40. The method of claim 33 wherein the base supports the magnetic flux sensor which is mounted to a printed circuit board which in turn is supported inside a non-magnetic housing.

41. The method of claim 40 wherein the base comprises a stainless steel housing with an integral glass passivated lead frame which maintains positive positioning of the magnetic flux sensor within the stainless steel housing.